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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/524,026	Applicant(s) NIIHO ET AL.	
	Examiner Hibret A. Woldekidan	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 April 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 7-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,7-21 and 24-28* is/are rejected.

7)☒ Claim(s) *22 and 23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 February 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Response to Arguments

1. Examiner acknowledges receipt of Applicant's remarks, arguments received on 04/06/09. Applicant's arguments have been fully considered but are moot in view of the new ground of rejection.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1,28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al. (US 6229,792).

Considering claim 1, Anderson discloses a wireless access system using Carrier Sense Multiple access for Media Access Control of a host device by using a plurality of terminals**(See Col. 1 line 47-60, Col. 5 lines 26-30, fig. 1C,1G i.e. a mobile communication system for communicating signals between other networks and user stations via a network device(106), a plurality of base stations(BS)(104), base station controller(BSC)(105))**, the wireless access system comprising: a master station for converting a first downstream electrical signal received from the host device into a downstream optical signal **(See Col. 5 line 17 and line 25-30,Col. 6 line 6-8, fig. 1c,1G,4 i.e. a master unit or a network device(106 of fig. 1C) (can be PCSC, PSTN,**

GSM) coupled to a base station controller(BSC)(105) via a fiber optic cable(108 of fig. 1C). As further illustrated in fig. 4, the network device(409) (PCSC, PSTN, GSM) communicates with other networks, PSTN. Since the master unit(106 of fig. 1C) transmits signal to the BSC(105 of fig. 1C) over fiber(108 of fig. 1C), it inherently has an E/O converter to convert the electrical signal to optical) and transmitting the downstream optical signal via an optical fiber transmission line**(Col. 5 line 17,line 25-30 and line 58-61, fig. 1c i.e. optical fiber transmission line(108) for transmitting downstream optical signals from the master station(106) to the base station controller(105))**, and for converting an upstream optical signal received via the optical fiber transmission line into a first upstream electrical signal and transmitting the first upstream electrical signal to the host device**(See Col. 5 line 17 and line 25-30, fig. 1c,4 i.e. a master unit or PSTN(106) coupled to the BSC(105) via fiber optic cable(108) and as further explained in fig. 4 the PCSC or PSTN(106) communicates with other networks, PSTN. Since the master unit(106)(PSCS,GSM,PCSC) receives upstream signal from the BSC(105) over optical fiber(108) and process the received signal in electrical domain it inherently has an electrical to optical converter);**

a plurality of slave stations each for converting a second upstream electrical signal received from any one of the plurality of terminals in a wireless communications area into the upstream optical signal and transmitting the upstream optical signal via the optical fiber transmission line**(See Col. 5 lines 11-18 and lines 43-50,fig. 1c i.e. Base stations(104) for receiving wireless signals from the user stations(102) and**

transmit the received signals in upstream direction to the Base station controller(105) via optical fiber(109)), and for converting the downstream optical signal received via the optical fiber transmission line into a second downstream electrical signal and transmitting the second downstream electrical signal to the wireless communications area**(See Col. 5 lines 11-18 and lines 43-50,fig. 1c i.e. since the Base stations(104) receives optical signals from the BSC(105) via fiber(109) and transmit wireless signals to the user stations(102), the base stations(104) inherently has an optical to RF converters)**;

and an access control section for transmitting the downstream optical signal received from the master station to the plurality of slave stations via the optical fiber transmission line **(See Col. 5 line 17 and line 25-30, fig. 1C i.e. the BSC(105) for receiving downstream optical signals from the master station (106) via optical fiber(108) to the base stations(104) via optical fiber(109))**, and transmitting the upstream optical signal transmitted from the any one of the plurality of slave stations to the master station, and to all other slave stations of the plurality of slave stations via the optical fiber transmission line**(See Col. 5 lines 11-18 and lines 43-56, Col. 17 lines 6-10,fig. 1c,4 i.e. the BSC(105) via fiber(109) for transmitting the upstream signals from the Base stations(104) to the master station(106))**.

Anderson does not explicitly disclose transmitting the upstream optical signal transmitted from the any one of the plurality of slave stations to all other slave stations of the plurality of slave stations.

However, Anderson discusses the base station controller(BSC)(407) serve as a bridge to transmit upstream signals received from any of the bases station(405) to other base stations(410) **(Col. 17 lines 6-10, fig. 4)**. Therefore it would have been obvious to one ordinary of skilled in the art to consider the BSC transmits upstream signal from the any one of the plurality of slave stations to all other slave stations of the plurality of slave stations.

Consider Claims 28, Anderson discloses a wireless access method for a system using Carrier Sense Multiple Access for Media Access Control of a host device via a plurality of terminals**(See Col. 1 line 47-60 i.e. a mobile communication system for communicating signals between other networks and user stations)**, the method comprising: connecting the host device and the plurality of terminals via a master station, an access control section and a plurality of slave stations**(See Col. 1 line 47-60, Col. 5 lines 26-30, fig. 1C,1G i.e. a mobile communication system for communicating signals between other networks and user stations via a network device(106), a plurality of base stations(BS)(104), base station controller(BSC)(105))**;

converting in the master station a first downstream electrical signal received from the host device into a downstream optical signal **(See Col. 5 lines 17 and line 25-30,Col. 6 lines 6-8, fig. 1c,1G,4 i.e. a master unit or a network device(106 of fig. 1C) (can be PCSC, PSTN, GSM) coupled to a base station controller(BSC)(105) via a fiber optic cable(108 of fig. 1C). As further illustrated in fig. 4, the network device(409) (PCSC, PSTN, GSM) communicates with other networks, PSTN. Since the master**

unit(106 of fig. 1C) transmits signal to the BSC(105 of fig. 1C) over fiber(108 of fig. 1C), it inherently has an E/O converter to convert the electrical signal to optical), and transmitting the downstream optical signal to the access control section through an optical fiber transmission line**(Col. 5 line 17,line 25-30 and line 58-61, fig. 1c i.e. optical fiber transmission line(108) for transmitting downstream optical signals from the master station(106) to the base station controller(105))**; transmitting via an access control section the downstream optical signal received from the master station to the plurality of slave stations through the optical fiber transmission line**(See Col. 5 line 17 and line 25-30, fig. 1C i.e. the BSC(105) for receiving downstream optical signals from the master station (106) via optical fiber(108) to the base stations(104) via optical fiber(109))**; Converting in the plurality of slave stations the downstream optical signal received from the access control section into a second downstream electrical signal **(See Col. 5 lines 11-18 and lines 43-50,fig. 1c i.e. since the Base stations(104) receives optical signals from the BSC(105) via fiber(109) and transmit wireless signals to the user stations(102), the base stations(104) inherently has an optical to RF converters in order to convert the received optical signal to RF signal and to transmit the converted RF signal to a plurality of user stations(102))**, and transmitting the second downstream electrical signal to a wireless communications area**(See Col.5 line 11-15, fig. 1C i.e. transmitting the RF signals to a plurality of user stations(102) wirelessly)**; converting in the plurality of slave stations a first upstream electrical signal received from any one of the plurality of terminals in the wireless communications area into an upstream optical signal and

transmitting the upstream optical signal to the access control section through the optical fiber transmission line**(See Col. 5 lines 11-18 and lines 43-50,fig. 1c i.e. Base stations(104) for receiving wireless signals from the user stations(102) and transmit the received signals in upstream direction to the Base station controller(105) via optical fiber(109))**; transmitting via the access control section the upstream optical signal received from the any one of the plurality of slave stations to the master station **(See Col. 5 lines 11-18 and lines 43-56, Col. 17 lines 6-10,fig. 1c,4 i.e. the BSC(105) via fiber(109) for transmitting the upstream signals from the Base stations(104) to the master station(106));**

and converting the upstream optical signal received from the access control section into a second upstream electrical signal, and transmitting the second upstream electrical signal to the host device **(See Col. 5 lines 17 and line 25-30, fig. 1c,4 i.e. a master unit or PSTN(106) coupled to the BSC(105) via fiber optic cable(108) and as further explained in fig. 4 the PCSC or PSTN(106) communicates with other networks, PSTN. Since the master unit(106)(PSCS,GSM,PCSC) receives upstream signal from the BSC(105) over optical fiber(108) and process the received signal in electrical domain it inherently has an electrical to optical converter)**.

Anderson does not explicitly disclose transmitting the upstream optical signal transmitted from the any one of the plurality of slave stations to all other slave stations of the plurality of slave stations.

However, Anderson discusses the base station controller(BSC)(407) serve as a bridge to transmit upstream signals received from any of the bases station(405) to other

base stations(410) **(Col. 17 lines 6-10, fig. 4)**. Therefore it would have been obvious to one ordinary of skilled in the art to consider the BSC transmits upstream signal from the any one of the plurality of slave stations to all other slave stations of the plurality of slave stations.

3. Claims 2,7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al. (US 6229,792) in view of Kim (US 2002/0003645).

Considering Claim 2 Anderson discloses the wireless access system according to claim 1, wherein the access control section for transmitting the downstream optical signal from the master station to a plurality of slave stations, and for allowing the upstream optical signal transmitted from the any one of the plurality of slave stations to the master station and the all other slave stations of the plurality of slave stations**(See Col. 5 lines 17-20, line 25-32 and line 43-49, fig. 1c a BSC(105) receives optical signal from the master station or PSTN(106) via fiber(108) and distribute the received downstream signals to a plurality of base stations(104) and similarly receives upstream signals from the plurality of base stations via optical fiber(109) and combine the signals to transmit to the master station or PSTN(106) via fiber(108))**.

Anderson further discloses the controller(BSC) concentrate the inputs from the multiple base stations and forward the concentrated signals to the master station(106)(See Col. 5 lines 45-50) and the base station controller(BSC) distributes the down stream signals to the base stations(See fig. 1c).

Anderson does not explicitly disclose the base station controller(BSC) has an optical multiplexing/demultiplexing section.

Kim teaches a base station control unit(BSC)(18 of fig. 3) having a multiplexing/demultiplexing unit(26,34 of fig. 3) for transmitting downstream and upstream signals from the plurality of base stations(15 of fig. 2) through optical fiber(36 of fig. 3)(**See fig. Paragraph 26, fig. 3,2).**

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Anderson, and have the base station controller(BSC) to have an optical multiplexing/demultiplexing section, as taught by Kim, thus providing an efficient signal transmission system by using a multiplexing/demultiplexing unit for increasing the transmission speed, capacity and coverage area of the communication network, as discussed by Kim **(Paragraph 10)**.

Considering Claim 7, Anderson and Kim disclose, the wireless access system according to claim 2, wherein the optical multiplexing/demultiplexing section is an omnidirectional distribution optical multiplexer/demultiplexer including at least an optical port connected to the master station and a plurality of optical ports connected to the plurality of slave stations, respectively**(See Kim: Paragraph 26, fig. 2,3 i.e. the optical WDM unit(34 of fig. 3) transmits downstream and upstream signals from the plurality of base stations(15 of fig. 2) through optical fiber(32,33,36 of fig. 3))**, and having formed therein an optical transmission path through which an optical signal transmitted to any one of the optical ports is transmitted to all other optical ports of the plurality of optical ports**(See Anderson: Col. 5 line 17,line 25-30 i.e. optical fiber**

transmission line(108,109) for transmitting signals between the master station(106) to the plurality of base stations through the BSC(106)).

4. Claims 3,10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al. (US 6229,792) in view of Kim (US 2002/0003645) further in view of Fevrier et al. (5,612,805).

Considering claim 3 Anderson disclose the base station controller(BSC)(407) serve as a bridge to transmit upstream signals received from any of the bases station(405) to other base stations(410)) **(See Col. 17 lines 6-10, fig. 4).**

Kim further teaches a base station control unit(BSC)(18 of fig. 3) having a multiplexing/demultiplexing unit(26,34 of fig. 3) for transmitting downstream and upstream signals from the plurality of base stations(15 of fig. 2) through optical fiber(36 of fig. 3)**(See fig. Paragraph 26, fig. 3,2)**.

Anderson and Kim do not specifically disclose the wireless access system according to claim 2, wherein the optical multiplexing/demultiplexing section returns the upstream optical signal transmitted from the one of the plurality of slave stations back to the one of the plurality of slave stations.

Fevrier teaches a multiplexing/demultiplexing section returns the upstream optical signal transmitted from the one of the plurality of slave stations back to the one of the plurality of slave stations**(See Col. 10 lines 2-4 and lines 8-16, fig. 7 i.e. a multiplexing/demultiplexing units(D,C) performing a return back operation for returning back the upstream signal(from AS3 to AN3)).**

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the invention of Anderson and Kim, and have a multiplexing/demultiplexing section to return the upstream optical signal transmitted from the one of the plurality of slave stations back to the one of the plurality of slave stations, as taught by Fevrier, thus providing an efficient signal transmission system by using a multiplexing/demultiplexing with a switching means for returning back or distributing the mux/demux signals to a selected destination, as discussed by Fevrier **(Col. 3 lines 14-16)**.

Claim 10, Fevrier teaches the wireless access system according to claim 7, wherein the optical multiplexing/demultiplexing section is comprises a combination of a plurality of optical multiplexing/demultiplexing units each including three optical ports and having formed therein an optical transmission path through which an optical signal inputted to any one of the three optical ports is outputted to all other Optical ports**(See (See Col. 10 lines 12-25, fig. 7 i.e. a multiplexing/demultiplexing units(D,C) has optical switches(I1,I2,I3,I4) and each optical switch has 3 ports((a,b,c) and (d,e,f). based on the connection direction each port of the optical switching unit can output upstream and downstream optical signals)**.

Considering Claim 11, Fevrier teaches the wireless access system according to claim7, wherein the optical multiplexing/demultiplexing section is comprises a plurality of optical couplers **(See Col. 10 lines 12-25, fig. 7 i.e. a multiplexing/demultiplexing units(D,C) has optical switches(I1,I2,I3,I4))**.

Considering Claim 12, Fevrier teaches the wireless access system according to claim 10, wherein the optical multiplexing/demultiplexing unit comprises a plurality of

optical couplers **(See Col. 10 lines 12-25, fig. 7 i.e. a multiplexing/demultiplexing units(D,C) has optical switches(I1,I2,I3,I4))**.

Considering Claim 13, Fevrier teaches the wireless access system according to claim7,wherein the optical multiplexing/demultiplexing section is comprises an optical waveguide**(See Col. 1 line 23-33, fig 1 i.e. optical multiplexing/demultiplexing unit(DS1 and MS1) are being coupled to N optical fibers or waveguides)**.

Claim 14, Fevrier teaches the wireless access system according to claim 10, wherein the optical multiplexing/demultiplexing unit is comprises an optical waveguide**(See Col. 1 line 23-33, fig 1 i.e. optical multiplexing/demultiplexing unit(DS1 and MS1) are being coupled to N optical fibers or waveguides)**.

5. Claims 4,17-21,24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al. (US 6229,792) in view of Kim (US 2002/0003645) further in view of Schwartz et al. (6,801,767).

Considering Claim 4 Anderson discloses the wireless access system according to claim 1, wherein the access control section for transmitting the downstream optical signal from the master station to a plurality of slave stations, and for allowing the upstream optical signal transmitted from the any one of the plurality of slave stations to the master station and the all other slave stations of the plurality of slave stations**(See Col. 5 lines 17-20, line 25-32 and line 43-49, fig. 1c a BSC(105) receives optical signal from the master station or PSTN(106) via fiber(108) and distribute the received downstream signals to a plurality of base stations(104) and similarly receives upstream signals from the plurality of base stations via optical fiber(109)**

and combine the signals to transmit to the master station or PSTN(106) via fiber(108))).

Anderson does not explicitly disclose the base station controller(BSC) has an optical multiplexing/demultiplexing section.

Kim further teaches a base station control unit(BSC)(18 of fig. 3) having a multiplexing/demultiplexing unit(26,34 of fig. 3) for transmitting downstream and upstream signals from the plurality of base stations(15 of fig. 2) through optical fiber(36 of fig. 3)**(See fig. Paragraph 26, fig. 3,2).**

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Anderson, and have the base station controller(BSC) to have an optical multiplexing/demultiplexing section, as taught by Kim, for the reasons discussed in claim 2.

Anderson and Kim do not specifically disclose a master station generates a superimposed optical signal by superimposing the upstream optical signal transmitted from the one of the plurality of slave stations onto the downstream optical signal, and returns the superimposed optical signal back to the optical multiplexing/demultiplexing section.

Schwartz teaches a master station or a main unit(400) generates a superimposed optical signal by superimposing the upstream optical signal transmitted from the one of the plurality of slave stations onto the downstream optical signal using a WDM, and returns the superimposed optical signal back to the optical

multiplexing/demultiplexing section(the combined signal from the WDM unit(411) return back to the expansion unit(105 of fig. 1) via optical fiber(410 of fig. 4 or 107 of fig. 1) so that the multiplexing/demultiplexing unit of the expansion unit(See fig. 5B) can distribute the WDM signal to a plurality of slave or remote stations(103,104,106 of fig. 1) **(See Col. 17 lines 60- Col. 18 lines 3, fig. 4,1,5b)**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Anderson and Kim, and have a master station to generate a superimposed optical signal by superimposing the upstream optical signal transmitted from the one of the plurality of slave stations onto an the downstream optical signal, and returns the superimposed optical signal back to the optical multiplexing/demultiplexing section, as taught by Schwartz, thus providing a cost efficient signal transmission system by sharing the same optical fiber to transmit both upstream and downstream signal, as discussed by Schwartz **(Col. 17 lines 63-65)**.

Considering Claim 17 Anderson discloses, the wireless access system according to claim 1, Wherein the master station comprises: an optical reception section for converting the upstream optical signal received from the access control section into the first upstream electrical signal**(See Col. 5 line 17 and line 25-30, fig. 1c,4 i.e. a master unit or PSTN(106) coupled to the BSC(105) via fiber optic cable(108) and as further explained in fig. 4 the master station(106) communicates with other networks, PSTN. Since the master unit(106)(PSCS,GSM,PCSC) receives upstream signal from the BSC(105) over optical fiber(108) and process the received signal in electrical domain it inherently has an electrical to optical converter)**; an optical

transmission section for converting the first downstream electrical signal into first downstream optical signal**(See Col. 5 line 17 and line 25-30,Col. 6 line 6-8, fig. 1c,1G,4 i.e. a master unit or a network device(106 of fig. 1C) (can be PCSC, PSTN, GSM) coupled to a base station controller(BSC)(105) via a fiber optic cable(108 of fig. 1C). As further illustrated in fig. 4, the network device(409) (PCSC, PSTN, GSM) communicates with other networks, PSTN. Since the master unit(106 of fig. 1C) transmits signal to the BSC(105 of fig. 1C) over fiber(108 of fig. 1C), it inherently has an E/O converter to convert the electrical signal to optical)**.

Anderson does not explicitly disclose the master station comprises: a first high-frequency amplification section for amplifying the first downstream electrical signal received from the host device; and a second high-frequency amplification section for amplifying the first upstream electrical signal converted by the optical reception section.

Schwartz teaches, a wireless access system according to claim 1, Wherein the master station comprises: a first high-frequency amplification section for amplifying the first downstream electrical signal received from the host device**(See Col. 9 lines 64-67, Col. 13 lines 12-18 and lines 27-32, Fig. 1,3A i.e. a main station(101) that communicates with a wireless communication network(120 of fig. 1) which includes GSM,PCs,WLAN has an RF amplifier section(307 of fig. 3a) for amplifying signals received signal from the wireless communication network(120))**;an optical reception section for converting the upstream optical signal received from the access control section into the first upstream electrical signal **(See Col. 13 lines 58-67, fig. 3a i.e. Optical to RF converters(Element 321) for**

converting the received upstream optical signal to RF signals); an optical transmission section for converting the first downstream electrical signal amplified by the first high-frequency amplification section into first downstream optical signal **(See Col. 13 lines 30-35, fig. 3a i.e. a uplink RF to optical converter(Element 309) for converting signals to optical signal)**; and a second high-frequency amplification section for amplifying the first upstream electrical signal converted by the optical reception section**(See Col. 14 lines 1-5, fig. 3a i.e. a second uplink RF-amplifier(Element 323) for amplifying the RF signals)**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Anderson, and have a master station to have a first high-frequency amplification section for amplifying the first downstream electrical signal received from the host device; and a second high-frequency amplification section for amplifying the first upstream electrical signal converted by the optical reception section, as taught by Schwartz, thus providing a means of improving the strength of signal before the signals being distributed other network units and also reduce interference between the upstream and downstream signals by individually amplifying the upstream and the downstream signal in a separate RF amplifiers, as discussed by Schwartz **(Col. 3 lines 41-46)**.

Considering Claim 18 Anderson and Kim disclose, the wireless access system according to claim 4, Wherein the master station comprises: an optical reception section for converting the upstream optical signal received from the access control section into the first upstream electrical signal**(See Anderson: Col. 5 line 17 and line 25-30, fig.**

1c,4 i.e. a master unit or PSTN(106) coupled to the BSC(105) via fiber optic cable(108) and as further explained in fig. 4 the master station(106) communicates with other networks, PSTN. Since the master unit(106)(PSCS,GSM,PCSC) receives upstream signal from the BSC(105) over optical fiber(108) and process the received signal in electrical domain it inherently has an electrical to optical converter); an optical transmission section for converting the first downstream electrical signal into first downstream optical signal**(See Anderson: Col. 5 line 17 and line 25-30,Col. 6 line 6-8, fig. 1c,1G,4 i.e. a master unit or a network device(106 of fig. 1C) (can be PCSC, PSTN, GSM) coupled to a base station controller(BSC)(105) via a fiber optic cable(108 of fig. 1C). As further illustrated in fig. 4, the network device(409) (PCSC, PSTN, GSM) communicates with other networks, PSTN. Since the master unit(106 of fig. 1C) transmits signal to the BSC(105 of fig. 1C) over fiber(108 of fig. 1C), it inherently has an E/O converter to convert the electrical signal to optical)**.

Anderson and Kim do not specifically disclose the wireless access system according to claim4,where in the master station comprises: a first high-frequency amplification section for amplifying the first downstream electrical signal received from the host device; a multiplexing section for allowing the first upstream electrical signal converted by the optical reception section and the first downstream electrical signal amplified by the first high-frequency amplification section to be multiplexed together; an optical transmission section for converting a multiplexed electrical signal multiplexed by the multiplexing section into an optical signal; and a second high-frequency

amplification section for amplifying the first upstream electrical signal converted by the optical reception section.

Schwartz teaches, the wireless access system according to claim4,where in the master station comprises: a first high-frequency amplification section for amplifying the first downstream electrical signal received from the host device**(See Col. 9 lines 64-67, Col. 13 lines 12-18 and lines 27-32, Fig. 1,3A i.e. a main station(101) that communicates with a wireless communication network(120 of fig. 1) which includes GSM,PCs,WLAN has an RF amplifier section(307 of fig. 3a) for amplifying signals received signal from the wireless communication network(120))**; an optical reception section for converting the optical signal received from the access control section into first upstream electrical signal **(See Col. 17 lines 43-45, fig. 4a i.e. Optical to RF converters(Element 421) for converting the received upstream optical signal to RF signals)**; a multiplexing section for allowing the first upstream electrical signal converted by the optical reception section and the first downstream electrical signal amplified by the first high-frequency amplification section to be multiplexed together**(See Col. 17, line 54-59, fig. 4a i.e. an uplink RF-combiner(422) for combing the converted upstream RF signals (from element 421-N) and downstream RF signals(from element 421-l))**; an optical transmission section for converting a multiplexed electrical signal multiplexed by the multiplexing section into an optical signal**(See Fig. 4a i.e. optical converter (406) converting multiplexed RF signals from WDM(413) to optical signals)**; and a second high-frequency amplification section for amplifying the first upstream electrical signal

converted by the optical reception section**(See fig. 4a, i.e. a uplink RF-amplifier(424) for amplifying RF signals)**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Anderson and Kim, and have a master station to have a first high-frequency amplification section for amplifying the first downstream electrical signal received from the host device; a multiplexing section for allowing the first upstream electrical signal converted by the optical reception section and the first downstream electrical signal amplified by the first high-frequency amplification section to be multiplexed together; an optical transmission section for converting a multiplexed electrical signal multiplexed by the multiplexing section into an optical signal; and a second high-frequency amplification section for amplifying the first upstream electrical signal converted by the optical reception section, as taught by Schwartz, thus providing a means of improving the strength of signal before the signals being distributed other network units and also reduce interference between the upstream and downstream signals by individually amplifying the upstream and the downstream signal in a separate RF amplifiers, as discussed by Schwartz **(Col. 3 lines 41-46)**.

Considering Claim 19, Schwartz teaches the wireless access system according to claim 17, wherein the master station further comprises: a transmitted/received signal multiplexing/separation section for allowing the first downstream electrical signal transmitted to the first high-frequency amplification section and the first upstream electrical signal transmitted from the second high-frequency amplification section to be

multiplexed together onto a transmission line. **(See Col. 19, line 7-25 i.e. WDM filter to transmit downlink and uplink signal together in a single line)**

Considering Claim 20, Schwartz teaches, the wireless access system according to claim 17, wherein the master station further comprises: an optical signal multiplexing/separation section for allowing the downstream optical signal transmitted from the optical transmission section and the upstream optical signal received by the optical reception section to be multiplexed together onto the optical fiber transmission line **(See Col. 19, line 7-25 i.e. WDM filter to transmit downlink and uplink signal together in a single optical fiber).**

Considering Claim 21, Anderson discloses the wireless access system according to claim 1, wherein the slave stations each comprise: an optical reception section for converting the downstream optical signal received from the access control section into the second downstream electrical signal **(See Col. 5 lines 11-18 and lines 43-50,fig. 1c i.e. since the Base stations(104) receives optical signals from the BSC(105) via fiber(109) and transmit wireless signals to the user stations(102), the base stations(104) inherently has an optical to RF converters)**.

Anderson does not explicitly disclose the base station having a first high-frequency amplification section for amplifying the second upstream electrical signal received from the any one of the plurality of terminals; a second high-frequency amplification section for amplifying the second downstream electrical signal converted by the optical reception section; and an optical transmission section for converting the

second upstream electrical signal amplified by the first high-frequency amplification section into the upstream optical signal.

Schwartz teaches a remote station having a first high-frequency amplification section for amplifying the second upstream electrical signal received from the any one of the plurality of terminals; a second high-frequency amplification section for amplifying the second downstream electrical signal converted by the optical reception section; and an optical transmission section for converting the second upstream electrical signal amplified by the first high-frequency amplification section into the upstream optical signal**(See Col. 14 line 14-22, Col. 15 lines 27-32, fig. 3B i.e. a remote unit(350) that communicates RF signals to a plurality of terminals(356,358,370) receives upstream RF signals and amplify the received signals using an upstream RF amplifier(375); a second RF amplifier which is a downstream RF amplifier(352) for amplifying the downstream RF signal that is converted from optical to RF using optical to RF converter(351); an optical transmission section for converting the upstream signal amplified by the first amplifier(375) to optical signal using RF to optical converter(376))**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Anderson, and a remote station having a first high-frequency amplification section for amplifying the second upstream electrical signal received from the any one of the plurality of terminals; a second high-frequency amplification section for amplifying the second downstream electrical signal converted by the optical reception section; and an optical transmission section for converting the

second upstream electrical signal amplified by the first high-frequency amplification section into the upstream optical signal, as taught by Schwartz, thus providing a means of improving the strength of signal before the signals being distributed other terminals and also reduce interference between the upstream and downstream signals by individually amplifying the upstream and the downstream signal in a separate RF amplifiers, as discussed by Schwartz **(Col. 3 lines 41-46)**.

Consider Claim 24, Anderson does not explicitly disclose the wireless access system according to claim 21, wherein the plurality of slave stations each further comprise an optical signal multiplexing/separation section for allowing the upstream optical signal transmitted from the optical transmission section and the downstream optical signal received by the optical reception section to be multiplexed together onto the optical fiber transmission line.

Schwartz teaches, the wireless access system according to claim 21, wherein the plurality of slave stations each further comprise an optical signal multiplexing/separation section for allowing the upstream optical signal transmitted from the optical transmission section and the downstream optical signal received by the optical reception section to be multiplexed together onto the optical fiber transmission line **(See Col. 18 line 14-25, fig. 4b i.e. each remote unit(450) has a an optical WDM(451,453) unit fro multiplexing and demultiplexing upstream and downstream signals).**

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the invention of Anderson, and have a slave or remote station to have an optical signal multiplexing/separation section for allowing the upstream optical signal transmitted from the optical transmission section and the downstream optical signal received by the optical reception section to be multiplexed together onto the optical fiber transmission line, as taught by Schwartz, for the same reason discussed in claim 21.

Consider Claim 25, Schwartz teaches the wireless access system according to claim 21, wherein the plurality of slave stations each further comprise a transmitted/received signal multiplexing/separation section for allowing the second upstream electrical signal received by the first high-frequency amplification section and the second downstream electrical signal transmitted from the second high-frequency amplification section to be multiplexed together onto a wireless transmission line via one antenna. **(See Col. 19, line 60-65, fig. 3b i.e. transmitting an upstream RF amplified and downstream RF amplified signals via a multi directional antenna(358))**

Consider Claim 26 and 27, Schwartz teaches, the wireless access system according to claim 20 and 24, wherein the optical signal multiplexing/separation section performs wavelength division multiplexing **(See Col. 18 line 1-5, Figure 4A i.e. a WDM filter (411) in the main unit performing wavelength division multiplexing).**

6. Claims 8,9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al. (US 6229,792) in view of Kim (US 2002/0003645) further in view of Fevrier et al. (5,612,805) further in view of Kimbrough et al.(US 2002/0063924).

Considering Claim 8, Anderson, Kim and Fevrier do not specifically disclose a method of combining and sending optical signals in a loop, the wireless access system according to claim3, wherein the optical multiplexing/demultiplexing section is an optical coupler including at least an optical port connected to the master station, a plurality of optical ports connected to the plurality of slave stations respectively, connected to each other by a loop and having formed therein an optical transmission path through which an optical signal inputted to any one of the optical ports from any one of the plurality of slave stations is outputted to the plurality of slave stations through the two optical ports connected to each other by a loop.

Kimbrough teaches a method of combining and sending optical signals in a loop, the wireless access system according to claim3, wherein the optical multiplexing/demultiplexing section is an optical coupler including at least an optical port connected to the master station, a plurality of optical ports connected to the plurality of slave stations respectively, connected to each other by a loop and having formed therein an optical transmission path through which an optical signal inputted to any one of the optical ports from any one of the plurality of slave stations is outputted to the plurality of slave stations through the two optical ports connected to each other by a loop**(See Paragraph 15,144,148, fig. 1, 17 i.e. as illustrated in fig. 1 a passive optical coupler(46) transmits upstream and downstream signals in optical network between a plurality of user stations(50) and central office(12) . As further explained in fig. 17, the passive optical coupler(46) has a plurality of output ports coupled to a plurality of user stations(50) via optical fibers(48) and an input port**

coupled to the central station(12 of fig. 1) via optical fiber(44); the plurality of optical ports in the optical coupler(46) coupled to each other and form a plurality of loops. Further explained in paragraph 15,148, the optical coupler(46) enables data transmit from any of the remote station(50) to all other stations).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Anderson and Kim, and modify the optical coupler to be a loopback optical coupler including at least an optical port connected to the master station, a plurality of optical ports connected to the plurality of slave stations respectively, connected to each other by a loop and having formed therein an optical transmission path through which an optical signal inputted to any one of the optical ports from any one of the plurality of slave stations is outputted to the plurality of slave stations through the two optical ports connected to each other by a loop, as taught by Kimbrough, thus providing an efficient transmission system for transmitting data from one subscriber station to another subscriber station without the need of sending data to the central office using a loop back couplers, as discussed by Kimbrough (Paragraph 148).

Claim 9, Anderson and Kim do not specifically disclose the wireless access system according to claim 3, wherein the optical multiplexing/demultiplexing section is a reflection optical coupler including at least an optical port connected to the master station, a plurality of optical ports connected to the plurality of slave stations respectively, and one optical port processed to be light reflective and having formed therein an optical transmission path through which an optical signal inputted to any one

of the optical ports from any one of the plurality of slave stations is transmitted to the plurality of slave stations through the one optical port processed to be light reflective.

Kimbrough teaches the wireless access system according to claim 3, wherein the optical multiplexing/demultiplexing section is a reflection optical coupler including at least an optical port connected to the master station, a plurality of optical ports connected to the plurality of slave stations respectively, and one optical port processed to be light reflective and having formed therein an optical transmission path through which an optical signal inputted to any one of the optical ports from any one of the plurality of slave stations is transmitted to the plurality of slave stations through the one optical port processed to be light reflective **(See Paragraph 15,144,148, fig. 1, 17 i.e. as illustrated in fig. 1 a passive reflective optical coupler(46) transmits upstream and downstream signals in optical network between a plurality of user stations(50) and central office(12) . As further explained in fig. 17, the passive optical coupler(46) has a plurality of output ports coupled to a plurality of user stations(50) via optical fibers(48) and an input port coupled to the central station(12 of fig. 1) via optical fiber(44); the plurality of optical ports in the optical coupler(46) coupled to each other and form a plurality of loops. Further explained in paragraph 15,148, the optical coupler(46) enables data transmit from any of the remote station(50) to all other stations)**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Anderson and Kim, have a passive optical reflective optical coupler to include at least an optical port connected to the

master station, a plurality of optical ports connected to the plurality of slave stations respectively, and one optical port processed to be light reflective and having formed therein an optical transmission path through which an optical signal inputted to any one of the optical ports from any one of the plurality of slave stations is transmitted to the plurality of slave stations through the one optical port processed to be light reflective, as taught by Kimbrough, for the same reason discussed in claim 8

7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al. (US 6229,792) in view of Kim (US 2002/0003645) further in view of Fevrier et al. (5,612,805) further in view of Ishida et al. (5,860,057).

Considering Claim 15. Anderson, Kim and Fevrier do not specifically disclose the wireless access system according to claim 3, wherein the one of the plurality of slave stations cancels its own upstream optical which has been returned back thereto from the optical multiplexing/demultiplexing section.

Ishida teaches the wireless access system, wherein the one of the plurality of slave stations comprising a return signal cancellation units **(See Abstract, Col. 3 lines 55-61, fig. 2 i.e. each stations(A,B) comprising a return signal canceling unit for canceling return signal (S_A', S_B')).**

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Anderson, Kim and Fevrier, and modify the slave stations to include a return signal cancellation units, as taught by Ishida, thus providing a means to eliminate signal interference in the communication units, as discussed by Ishida **(col. 1 lines 34-37)**.

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al. (US 6229,792) in view of Schwartz et al. (6,801,767) further in view of Ishida et al. (5,860,057).

Considering Claim 16. Anderson and Schwartz do not specifically disclose the wireless access system according to claim 4, wherein the one of the plurality of slave stations cancels its own upstream optical signal which has been returned back thereto from the optical multiplexing/demultiplexing section.

Ishida teaches the wireless access system, wherein the one of the plurality of slave stations comprising a return signal cancellation units **(See Abstract, Col. 3 lines 55-61, fig. 2 i.e. each stations(A,B) comprising a return signal canceling unit for canceling return signal (S_A', S_B'))**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Anderson and Schwartz, and modify the slave stations to include a return signal cancellation units, as taught by Ishida, thus providing a means to eliminate signal interference in the communication units, as discussed by Ishida **(col. 1 lines 34-37)**.

Allowable Subject Matter

Claims 22 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusions

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hibret A. Woldekidan whose telephone number is (571)270-5145. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on 5712723078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. A. W./
Examiner, Art Unit 2613

/Kenneth N Vanderpuye/
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